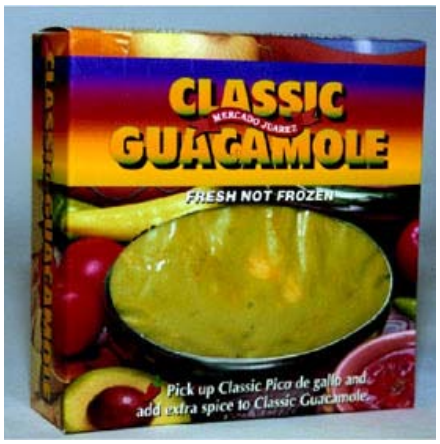
High-Pressure Processing (HPP)

High Pressure Processing (HPP) is a novel food processing method that uses pressure to provide safe, minimally processed foods with superior appearance, taste, texture, and nutritional value as compared to traditional heat processed foods. HPP is particularly applicable to the development of extended shelf life dairy, fruit and vegetable items and high quality shelf stable potatoes, eggs, fish and whole muscle meats.

Why is it Needed?

This promising new technology will increase quality, expand ration variety and subsequently enhance warfighter morale and nutritional status.



Technology:

Very high pressures are applied to the food, with or without the addition of heat, to achieve microbial inactivation while preventing significant chemical changes that effect the food's quality. There is a growing list of commercial high pressure processed foods; however most still require refrigeration unless it is an acid or acidified food. HPP can be used for the pasteurization of foods to extend shelf life and enhance quality — however the food still requires refrigeration unless it is an acid or acidified food. For military use we are investigating HPP sterilization of low acid foods which requires the short term application of both heat and high pressure. The quality is superior to traditional thermal processing which requires the application of high heat for an extended period of time. Efforts include modeling the processing variables (time, temperature and pressure) as they relate to the inactivation of bacterial spores. The model will be used to define safe and effective high pressure processes for shelf stable foods.

Natick has been involved in a Dual Use Consortium focused on high pressure processing of low acid foods with significant industry cost sharing involving: Flow International/Avure; Proctor & Gamble; Kraft; ConAgra; Hormel; and Unilever with a demonstration site at the National Center for Food Safety and Technology at IIT in Chicago and testing at the NFPA National Food Lab. Filing for regulatory approval of high pressure processing is anticipated in 2004.

Prototype extended shelf life fruit yogurt produced for NASA have been developed in collaboration with Avure and Oregon State University.

Key Features / Benefits:

- Increased quality, variety, acceptance and consumption of military rations
- Enhanced warfighter morale & nutrition
- Dual Use S&T program provides significant cost sharing

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